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Memoranda of a revision of the North American Violets. II.¹

ASA GRAY.

GROUP IV. Subcaulescent, first flowering from the ground, on slender mostly subterranean shoots from a deep thick rootstock or caudex, not stoloniferous nor creeping, later more caulescent, always low: corolla wholly or mainly yellow, except in last two species, the spur short-saccate: stigma beakless, sometimes with a short antrorse lip, concave, orbicular, antrorse-terminal or oblique at the large and gibbous-clavate summit of the style, bearded below its margin by a tuft or rarely a ring of stiff and reflexed or spreading bristles. Western species, but one cismontane.

* Leaves undivided, from roundish-ovate or cordate to lanceolate: lateral petals slightly bearded or beardless in the same species.

+ Ovary and oval capsule glabrous.

V. pedunculata Torr. & Gray. California and Arizona.

V. Nuttallii Pursh. Kansas to the Saskatchewan, British Columbia, and the northern borders of California. Although some forms of this come near to the next, the capsule should distinguish them. A good part of Sir Wm. Hooker's *V. præmorsa* belongs here, namely the specimens of Scouler's collection. Also *V. linguæfolia* Nutt. in Torr. & Gray.

+ + Ovary and globular capsule pubescent.

V. præmorsa Dougl. in Lindl. Bot. Reg. t. 1254; Hook. Fl. as to pl. Dougl. only. *V. præmorsa* and *V. Nuttallii* Benth. Pl. Hartw. 298. This proves to be the species more commonly known as *V. aurea* Kellogg, and a form of it must be his *V. Brooksii*. It ranges from W. Idaho and drier parts of Washington Territory to Southern and Lower California, in a great variety of forms, among them the var. *venosa* (*V. aurea*, var. *venosa* Watson, *V. purpurea* Kellogg): there are larger-leaved and long-petioled forms which approach *V. pedunculata*, and narrow-leaved ones which are very like *V. Nuttallii*.

* * Leaves finely dissected: subterranean shoots commonly sending up their scapiform peduncles from under ground; the last species more caulescent.

+ Petals beardless, essentially yellow.

V. chrysantha Hook. Well marked by the bipinnately dissected leaves, beardless and deep orange-yellow petals, the upper slightly or largely brown-purple.

¹ Concluded from page 256.

V. Sheltonii Torr. Known by the glabrous palmately dissected leaves of orbicular outline and light yellow petals. The stigma has the bearded tufts of the related species, but small.

+ + Lateral petals bearded; upper deep violet-purple or blue; lower pale or yellow.

V. Beckwithii Torr. & Gray, is pubescent or puberulent, its rounded leaves palmately about thrice 3-parted into linear or spatulate-linear acutish or obtuse lobes, the primary divisions petiolulate: upper petals deep violet-purple, the others light blue or bluish, with yellow base, lateral ones short-bearded.

V. Hallii Gray. Glabrous throughout: the leaves of ovate or oblong or irregular outline, subpinnately or pedately about twice parted into lanceolate or linear lobes, their tips obtuse or acutish and callous-apiculate, veins or ribs indistinct: upper stipules commonly foliaceous, often enlarged and lacinate or entire: upper petals deep blue, others yellow or cream-color.—From Salem, Oregon, to Humboldt county, California.

V. trinervata Howell, in printed distribution, and in BOTANICAL GAZETTE, viii. 207, as a questionable variety of *V. Beckwithii*. This is *V. chrysantha*, var. *glaberrima* Torr. in Wilkes Exped., xvii. 238, where it is said (doubtless from Pickering's notes) that the upper petals are purplish and the others yellow. It is well distinguished from *V. Hallii* by the more pedately and less dissected leaves; the divisions from lanceolate to almost ovate, acute or apiculate, at maturity almost coriaceous, and *prominently 3-ribbed*, the lateral ribs intramarginal; also by the small and entire and nearly free stipules. It is known only in the eastern parts of Washington Territory, was rediscovered by Howell in 1874, and later by Suksdorf.

GROUP V. Caulescent; the few-several-leaved stems erect from short or creeping rootstocks; no stolons; no radical flowers: spur of corolla short and saccate; lateral petals commonly scantily papillose-bearded: stigma beakless, bearded or pubescent at the sides.

* Petals yellow: main stems usually naked at base and few-leaved above.

V. lobata Benth. Pl. Hartw. A species of the Pacific Coast, with very various and mostly digitately cleft or lobed leaves: with

Var. *integrifolia* Watson, with mostly deltoid- or rhombic-ovate often caudate-acuminate leaves, which is to the species what *V. hastata* is to *V. tripartita* Ell. Perhaps it passes to *V. glabella*.

V. hastata Michx., an Alleghany Mountain species, extending to Ohio and to the northwestern borders of Florida; generally well marked by its approximate and deltoid-hastate or subcordate leaves.

Var. **tripartita**, the *V. tripartita* Ell., a remarkable form with trifid or 3-parted or even trifoliolate leaves, evidently, as LeConte maintained, only an usual state of *V. hastata*.

V. glabella Nutt. in Torr. & Gray, Fl. A Pacific species, ranging from the middle parts of California to Alaska and to Japan; its northernmost forms coming too near the Asiatic *V. uniflora* L., while its most eastern in the northern Rocky Mountains are not readily distinguished from *V. pubescens*. With Maximowicz, I conclude that we should keep up these species.

V. pubescens Ait. This common and rather variable Atlantic American species, contrary to Maximowicz, I must keep entire. The capsule in all its forms varies from oblong to globular (even on the same stems), and from glabrous to densely tomentose; and the very pubescent plants are connected by transitions with

Var. **scabriuscula** Torr. & Gray, which should have been named *glabriuscula*, for it really is not scabrous.

* * Petals white, with violet or purple tinge, and some yellow or yellowish at base within: stems more leafy or more prolonged by successive leaf- and flower-bearing growths up to midsummer: stipules small, narrow, entire and nearly scarious: capsule oval, glabrous.

V. Canadensis L. This ranges from Newfoundland to Saskatchewan and the Rocky Mountains, to those of Utah and Arizona. In New Mexico and Colorado it passes into

Var. **scopulorum**, a diminutive and depressed form, of which the most characteristic form was collected in Clear Creek cañon, by Mr. Greene.

V. ocellata Torr. & Gray. Known only in California; seems well to hold its characters as a species.

V. cuneata Watson, Proc. Am. Acad. xiv. 290, and Bot. Calif. ii. 433. Mountain woods in the northern part of California and adjacent Oregon. Distinguished from the preceding by its smoothness and its rhombic-ovate or cuneate leaves, only the radical ones cordate.

GROUP VI. Caulescent from more or less creeping rootstocks, or at first flowering nearly acaulescent, erect or spreading: leaves cordate, undivided: stipules more or less herbaceous: corolla from blue to white, with *projecting* oblong to cylindrical spur: style moderately thickened upward, beardless.

* Spur of corolla not very long: lateral petals usually bearded: stigma inflexed, a short scariosus beak. (*Canina*.)

+ Stipules from serrate to fimbriate-pinnatifid or pectinate.

V. striata Ait. Stems 3-4-angled, ascending and at length a foot or more long, producing normal petaliferous flowers until midsummer or later: corolla yellowish-white; lower petal striate with brown-purple lines; spur thick, rather shorter than the sepals: capsule ovoid.—An Atlantic and mostly northern species, extending along the mountains to Georgia, and westward only to Minnesota and Missouri. My *V. laciniosa* of Japan is the analogue of this rather than of any form of the next, with which Maximowicz would associate it.

V. canina L. Our forms of this collective species, none of them quite identical with European, may be grouped under the following varieties:

Var. **Muhlenbergii**, the common Atlantic American Dog Violet, nearest to the Old World *V. canina*, var. *sylvestris*, may as well retain the name under which Torrey published it (as *V. Muhlenbergii*) in 1824, the same year in which it was named *Muhlenbergiana* in the Prodrômus. The alpine and arctic form of it, *V. Muhlenbergii*, var. *minor* Hook. Fl., has recently been illustrated under this name by Lange in the Flora Danica, from Greenland. Dr. Engelmann detected a summer form of it on the sand-beaches of Lake Superior, answering to *V. arenaria*. Our plant is only spring-flowering; in summer it sends off prostrate stems bearing cleistogamous flowers.

Var. **multicaulis**, the *V. Muhlenbergii*, var. *multicaulis* Torr. & Gray, Fl., and doubtless *V. radicans* DC. (though the summer runners, so far as seen, do not root), is a peculiar form of the Southern Atlantic States, in rocky or sandy ground, from Kentucky to Florida and Texas; there flowering from February to April, depressed-spreading, and with round leaves; later in the season producing prostrate leafy branches or runners, bearing cleistogamous flowers.

Var. **adunca** Gray. To this, the type of which is *V. adunca* of Smith in Rees' Cyclopædia, I refer all the far western forms of the species, which differ from the eastern somewhat in habit, in less cordate leaves, and in the generally longer spur which is disposed to be curved or hooked. The more southern and larger forms, which prevail in California, answer to *V. longipes* Nutt. The smaller and higher northern form answers to Regel's *V. canina*, var. *rupestris*.

Var. oxyceras Watson, in the Botany of California, is remarkable for its acute as well as long spur. It has been collected, so far as I know, only by Dr. Torrey near Donner's Pass over the Sierra Nevada, and by Brewer and later by myself on very high ground between Clark's and the Yosemite.

+ + Stipules entire, or nearly so, linear: flowers on scapes from the rootstock and few on 1-3-leaved ascending stems, pretty large.

V. mirabilis L. A species allied on one hand to *V. Langsdorffii*, on the other to *V. canina*, ranging from the mountains of Europe to N. E. Asia; and I somewhat doubtfully refer to it a plant collected in Oregon, near Portland, in coniferous woods, by Mr. Howell. The species was so named by Linnæus because the only one he knew having what are now called cleistogamous flowers.

* * Spur to corolla very long; petals beardless: style slender-fusiform, symmetrical; stigma erect and terminal, small: stipules lacinate-pectinate.

V. rostrata Muhl. A strongly marked species, of the Alleghany region, ranging from Upper Canada and Michigan, through the higher parts of the State of New York, to the mountains of Georgia. Mr. Dolph long ago sent me, from northern Pennsylvania, flowers having the spur 2-3-corniculate at tip.

The section *Melanium*, which includes the pansy and *V. cornuta*, now well known but not so common in our gardens, and which has the enlarged and globular apex of the style hollowed into a large and deep nectariferous and stigmatic cavity, is represented in America only by

V. tricolor L., var. **arvensis** DC. I had always taken this field form of the pansy for a mere escape from cultivation; but it occurs in rather numerous localities from Canada to Texas; and several botanists familiar with it insist that it is indigenous.

If we count this as indigenous, in deference to the weight of authority, we have thirty-three wild species of Violet in North America, all but eight of them endemic.

It is not out of place to remark that I persist in the opinion that *Solea concolor* of Gingius represents a genus quite distinct from *Ionidium*, and of course I should keep up *Hybanthus*.